

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Location-Based Routing for)	PS Docket No. 18-64
Wireless 911 Calls)	

COMMENTS OF PRECISION BROADBAND LLC

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Precision Broadband LLC (Precision Broadband) respectfully submits these comments in response to the Commission’s March 23, 2018 Notice of Inquiry in the above-captioned proceeding, which concerns the technical challenges associated with acquiring accurate locations for wireless 911 calls and the resulting delays in emergency assistance due to the misrouting of many of those calls. Precision Broadband shares the Commission’s concerns and has been developing solutions that address those challenges since 2016. These comments provide an overview of Precision Broadband’s technology, along with responses to specific questions raised in the Notice of Inquiry. Detailed responses to questions asked by the Commission are also provided in the attached Appendix.

I. INTRODUCTION AND BACKGROUND

Precision Broadband was founded in 2016 by telecom veteran Charley Simon with the purpose of improving public safety by addressing today’s technology challenges with 911 communications and caller location identification. The principals of Precision Broadband and its collaborating partners have deep experience in facilities-based broadband networks, PSTN and VoIP telephone networks, mobile applications and 911 emergency services technologies.

Precision Broadband has been developing a lightweight ISP-, mobile carrier-, and PSAP-friendly system for providing accurate, real-time 911 location, call routing and communication

services utilizing the fixed broadband networks of cable, telco, fixed-wireless and similar ISPs. The need for Precision Broadband's system is a consequence of consumers disconnecting landline phone service, leaving 175 million people living in 68 million US households¹ without a system for providing highly accurate and timely location information essential for 911 emergency services to effectively operate.

To date, Precision Broadband has produced a working prototype system, which has been successfully tested – in collaboration with INdigital, a leading 911 technology systems provider, a facilities-based ISP and the Illinois Institute of Technology (IIT) – on an end-to-end 911 call. This proof-of-concept produces the same real-time, dispatchable civic address location and PSAP-routing as is capable with landline telephone E911 service. Precision Broadband has also filed a provisional patent application covering some of the innovations described herein to enable such a system to be deployed in a scalable, production application.

The proliferation of broadband services and Internet-connected devices provides an overlooked opportunity to greatly expand 911 location and communication capabilities while unlocking new funding sources. Given that roughly 83% of US households² have fixed broadband, there has been sharp growth in the new market for non-phone communication devices – such as tablets, PCs, digital voice assistants (Google Home, Amazon Echo, etc.), medical alert sensors, accessibility devices, connected home appliances, and IoT gadgets. As

¹ U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, “Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July–December 2016” (May 2017) *available at* <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201705.pdf> (last visited April 26, 2018) [hereinafter “*National Center for Health Statistics Survey*”].

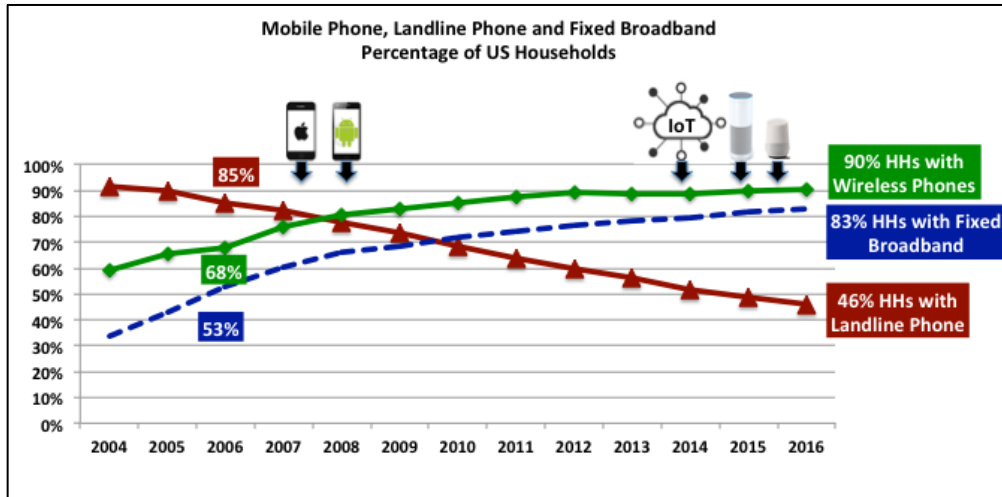
² Statista Inc., “Number of fixed broadband subscriptions in the United States from 2000 to 2016 (in millions)” (2018) *available at* <https://www.statista.com/statistics/183614/us-households-with-broadband-internet-access-since-2009/> (last visited April 26, 2018) [hereinafter “*Statista Broadband Subscription Report*”].

consumers use these devices for everyday voice, video, text and data communications, they naturally expect to connect to 911 the same way.

Critically, however, these IP devices are not presently allowed to directly connect to 911 networks via broadband data services. To do so would require additional security measures to address cyber risks and false alarms capable of disrupting or disabling 911 operations. With the innovations under development for building a secure system for broadband access, Precision Broadband intends to offer software and services for enabling new 911 capabilities for these and other communication devices. Market participants in this ecosystem include ISPs, public safety entities, and consumer electronics OEMs.

As acknowledged in the Notice of Inquiry, the problems with 911 location and call routing accuracy are life-threatening and have in fact been growing over the past 20 years, driven by changes in technology and consumer behavior. We have migrated from landline phone service, which now is used in just 46% of US households today, to predominantly wireless mobile phones, which are now used in 90% of households (Figure 1).³ The landline system provides a fast and accurate 911 connection with the horizontal (street) and vertical (multi-story) civic address location required to dispatch emergency responders. Wireless phones, on the other hand, send an algorithmically derived target area (using assisted GPS and tower proximity technology) from where calls originate (ranging 50 to 300 meters at ground level only) – a system that is not always reliable in time-sensitive emergencies.

³ *National Center for Health Statistics Survey, page 5.*



Source: See Footnotes 1 & 2

Figure 1

Unlike other technologies that use circuitry built into the mobile device for location data (GPS, tower proximity), the cloud-based system Precision Broadband is developing acquires the location from just the access network. Precision Broadband’s innovations utilize fixed broadband network elements and databases to automatically ascertain the horizontal and vertical location of a network-connected user device. Other than initiating the call, no user input is required and the user device does not need to have location electronics. The system could be implemented quickly and economically, because it leverages existing network architectures, equipment, topologies, provisioning processes, databases, and consumer devices, as well as legacy and NG911 standards. Moreover, the fixed broadband-enabled system provides an alternate path for 911 multimedia communications (in addition to the landline and mobile phone networks), thereby creating additional diversity and redundancy in 911 networks.

While both public and private entities operate 911 systems, it is the consumer that is the ultimate user of 911 services. In October 2017, Precision Broadband commissioned a Survey Monkey study to better understand consumer perceptions of 911 services and gauge the potential demand for 911 access via broadband. The study consisted of a nationwide panel of 250 people

representing all demographic groups and areas of the United States. Key takeaways of this study include:

- 30% of respondents called or texted to 911 in the last 2 years.
- 36% of those that contacted 911 reported that emergency services did not know their location.
- Perceptions of all respondents about 911 services being able to accurately and quickly locate the caller:
 - 67% of mobile phone users believe calling 911 from a mobile phone is reliable.
 - 20% of mobile phone users believe texting 911 from a mobile phone is reliable.
 - 75% of landline phone users believe calling 911 from a landline phone is reliable.
- 56% of respondents are interested in using at least one device (smart phone, tablet, PC, digital voice assistant, TTY and video relay system) to contact 911 via their home broadband connection.

In addition to the many public interest benefits of the technology, the system proposed by Precision Broadband opens a new market with potentially new economics by leveraging an existing 911 funding model. By utilizing fixed broadband for 911, state governments would be justified, and legally empowered, to assess 911 fees on home broadband service (as is done today on landline and mobile phone service). When applied to the 106 million US broadband households,⁴ an additional \$1 billion annually could be collected for 911 services. These fees, along with revenues from new entrants in the 911 market, could be used to implement the solutions being developed by Precision Broadband and other market participants as well as expediting the deployment of NG911 technologies.

II. 911 FIXED BROADBAND SYSTEM TECHNOLOGY OVERVIEW

Precision Broadband's innovation derives the location of a 911 caller whose IP device (smartphone, tablet, PC, digital voice assistant, etc.) is connected to a fixed broadband network.

⁴ *Statista Broadband Subscription Report*.

It uses existing network data elements to automatically acquire the location in real-time and then routes the call to the location-serving PSAP. While the fixed broadband 911 location system can be adapted for legacy 911 PSAPs, the optimal design is for NG911 ESInets. Precision Broadband's technologies are focused on the following areas (Figure 2, circled in red):

- Internet Service Provider access;
- Border Control Function (BCF);
- Location Information Server (LIS); and
- Subscriber Database.

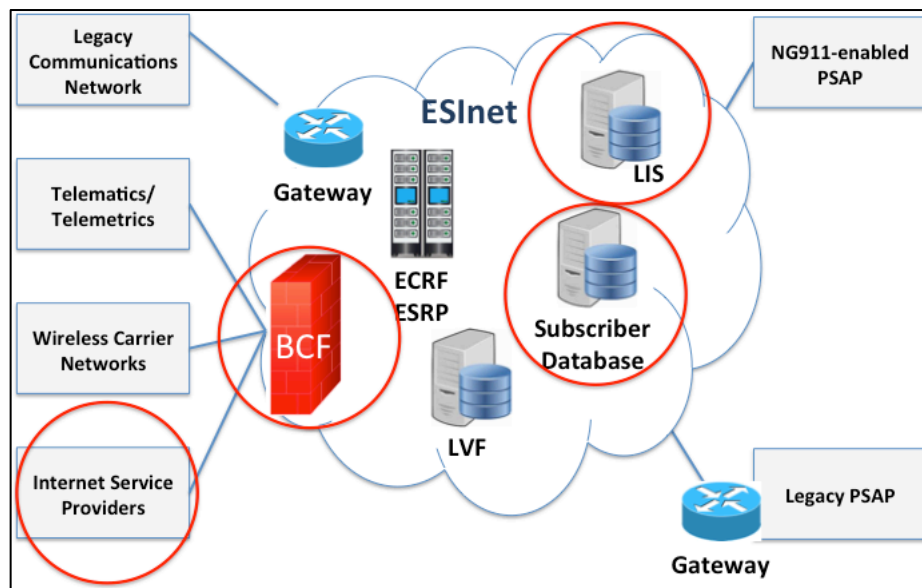


Figure 2

The Fixed Broadband location and communication system (Figure 3) introduces:

- A new client application (preferably code embedded in the device operating system);
- A cloud-based application server (external or internal to the ISP's networks); and
- A security gateway server.

These applications would interface with the existing broadband and 911 network architectures requiring only application modules to be installed at the borders between those networks. Details of these applications, techniques and prototypes are proprietary and will be provided upon request pursuant to appropriate trade secret protection.

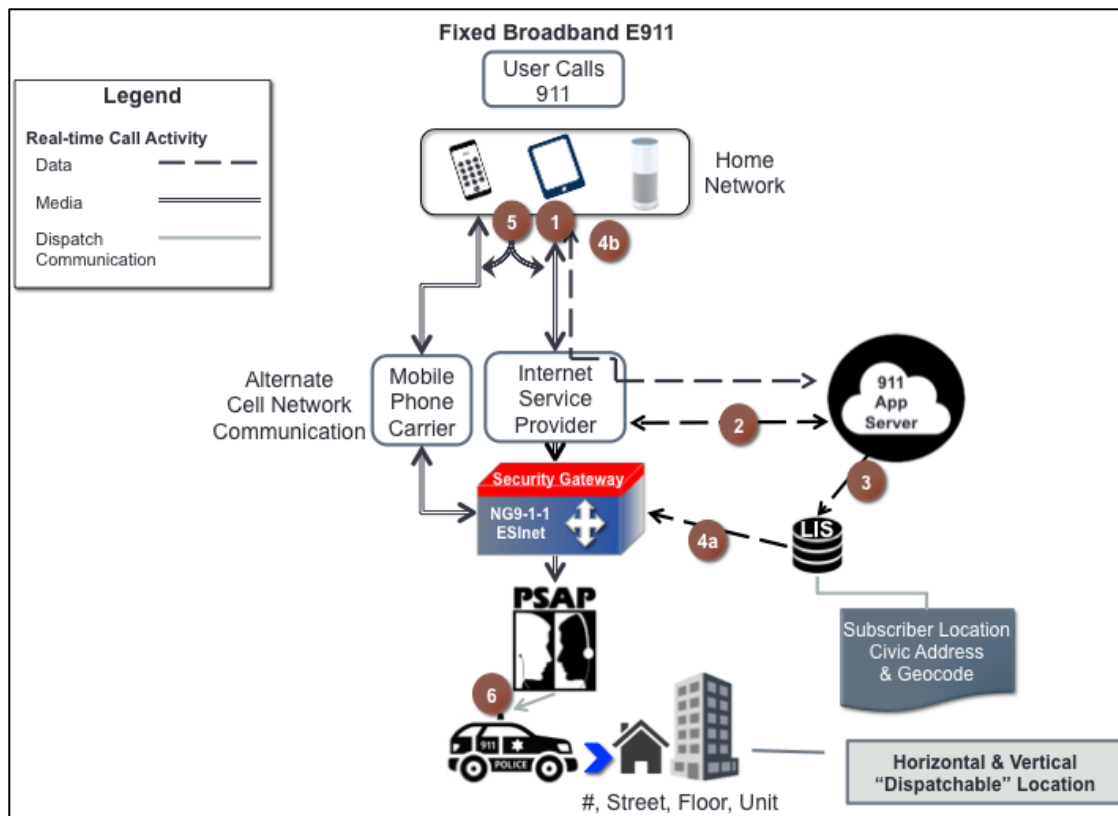


Figure 3

By enabling the fixed broadband platform for 911, a third location and transport network for emergency services is established – increasing location accuracy, capacity, redundancy and reliability (Figure 4).

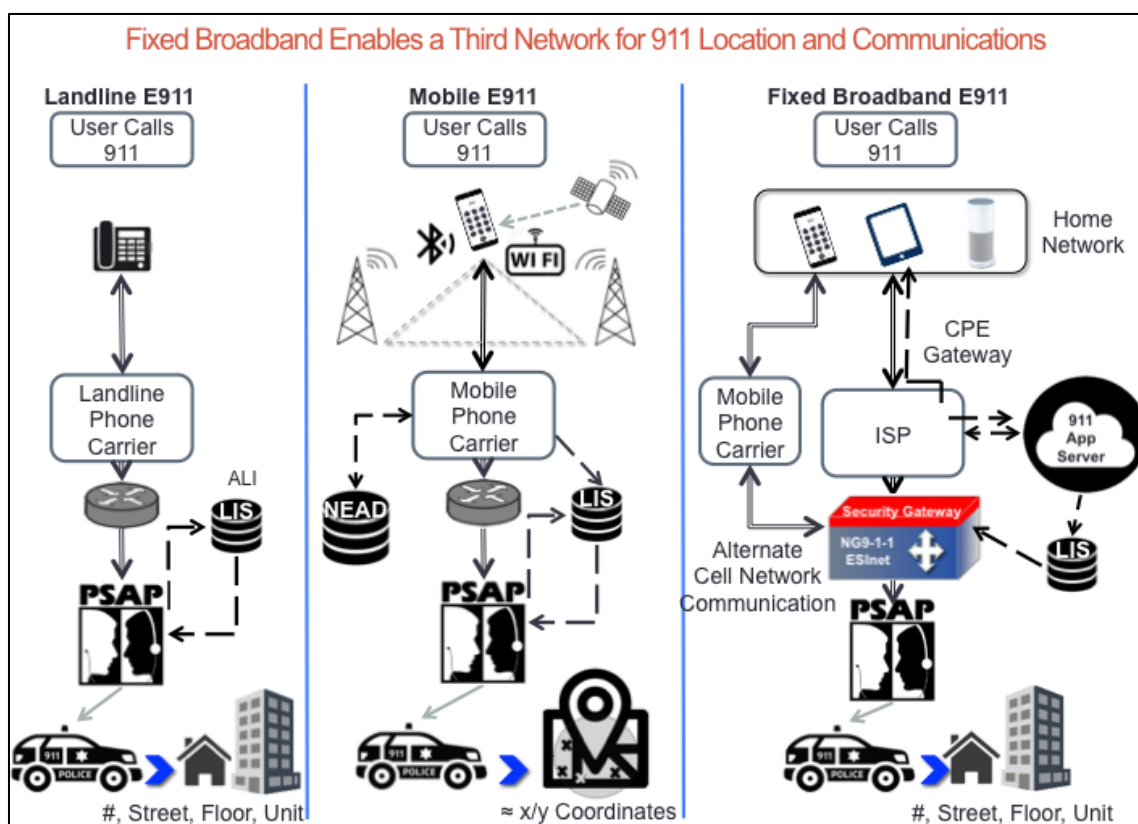


Figure 4

III. FIXED BROADBAND 911 LOCATION AND HYBRID SOLUTIONS

The fixed broadband-enabled system offered by Precision Broadband is not a substitute for other location technologies - existing or in development. It is more complementary. While independent of any other location technology (A-GNNS/A-GPS, Advanced Mobile Location - AML, NEAD, etc.), the fixed broadband 911 location system offered by Precision Broadband is expected to be used concurrently with other technologies as part of a hybrid solution.

Ultimately, the most optimal solution is that either the device, the network, and/or the PSAP system will ascertain which location data point from the various technologies is the most accurate under a given set of circumstances. In the near-term, however, we believe the Precision Broadband fixed broadband system can be deployed expeditiously and widely until other device and network-based solutions are ready.

IV. INDUSTRY STANDARDS

Today, we have specifications and industry standards related to 911 calls arriving from users of landline telephones, cellular phones, and IP-based phones. Specifications and standards for the 911 networks that receive these calls are extensive and can be found in documents provided by the FCC, state public service commissions, IETF, IEEE, NENA, ATIS, ETSI, 3GPP, and other organizations. Aspects of the location standards that have been developed to date that utilize IP access networks are the foundation for Precision Broadband's broadband location system.

However, many of those standards assume changes to, and replacements of, installed networks, end-user devices, and customer premise equipment hardware and/or firmware. In practice, implementing these standards as-is would impose considerable costs and operational impacts on service providers and consumers. This is likely why no fixed broadband location and routing system has been deployed. Precision Broadband's solution leverages certain aspects of some of these standards, with a variation on techniques that would facilitate implementation without changing existing and installed networks or hardware.

Lastly, some new standards for emerging services, applications, and new classes of non-phone IP devices will need to be agreed upon, especially with regard to cyber security, user error, and false alarms. These will be required to fill gaps and ensure universal support among device and operating system manufacturers, carriers, ISPs, and PSAPs.

V. ECONOMICS

Today, the 911 system is funded through monthly fees charged on mobile and landline telephone service. Fees range from \$0.25 to \$2.00 per phone line per month on subscriber bills determined by individual state and local jurisdictions.⁵ Based on phone line counts and a weighted average fee of \$0.75 per line per month, the total annual 911 fees billed are approximately \$3.0 - \$3.6 billion, of which a reported 95% is spent directly for 911 purposes (Figure 5).⁶

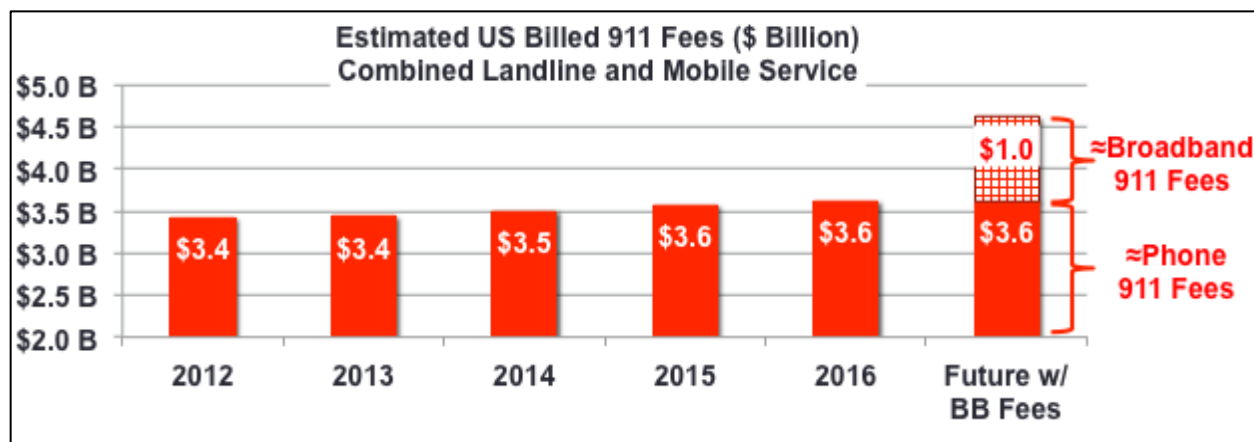


Figure 5

Until now, there was no basis for assessing such fees on broadband because data service has not been used for routing and transporting 911 calls (other than VoIP providers like Vonage and nominal WiFi calling supported by some devices and mobile carriers).⁷ The legal

⁵ National Emergency Numbering Association (NENA), “911 Surcharge - User Fees by State” (2017) available at <https://www.nena.org/?page=911RateByState> (last visited April 26, 2018).

⁶ *National Center for Health Statistics Survey*, page 5 (landline household phone counts); Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, “Voice Telephone Services: Status as of December 31, 2016” (February 2018) available at <https://www.fcc.gov/voice-telephone-services-report> (mobile telephone subscriber counts); Federal Communications Commission, Ninth Annual Report to Congress on State Collection and Distribution of 911 and Enhanced 911 Fees and Charges for the Period January 1, 2016 to December 31, 2016 (December 29, 2017) available at <https://www.fcc.gov/files/9thannual911feereportpdf> (911 fees per state).

⁷ In these cases, the wireless carriers and Vonage process 911 calls exclusively through their networks using traditional classes of phone devices and legacy 911 PSAP interconnects.

framework for broadband-based 911 fees has long been established. The *Internet Tax Nondiscrimination Act* includes a specific carve-out that permits states to assess 911 charges on broadband connections.⁸ And, for example, Michigan’s *Emergency 9-1-1 Service Enabling Act 32 of 1986 Law* (as amended) supports the application of such fees, by requiring each “service supplier...[to] bill and collect a...9-1-1 charge from all service users,” where “service supplier” is broadly defined to include any provider of a service “capable of accessing, connecting with, or interfacing with a 9-1-1 system[.]”⁹ If implemented nationwide, an additional \$1 billion per year (based on current broadband connections and average 911 fees) could be added to the 911 funding pools (See Figure 5 - Future w/ BB Fees).

The technology under development could be licensed to consumer device manufacturers and application developers seeking to enable new devices for authorized and secure 911 access, as well as to ISPs and state and local 911 agencies. The cost of implementing such technology by the participants in the ecosystem would be funded through 911 fees collected from broadband data customers. For instance, the aforementioned Michigan law provides for the allocation of 911 fees among the counties (65%), wireless and IP-based 911 service providers (25.56%), PSAP training (5.5%), and state police regional dispatch and state 911 administration (3.94%).⁸ Portions of the amounts allocated to IP-based 911 service providers could conceivably go toward covering the compliance costs of facilities-based fixed broadband ISPs.

VI. CONCLUSION

Precision Broadband LLC urges the FCC to consider our proposal for a new, fixed broadband 911 location and routing system, which:

⁸ Internet Tax Nondiscrimination Act, Pub. L. 108-435 (codified as note to 47 U.S.C. § 151).

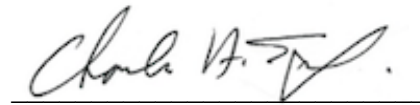
⁹ Mich. Comp. Laws Ann. §§ 484.1102 & 484.1401a (2018).

- Provides a real-time, dispatchable, horizontal and vertical landline-phone equivalent location along with timely routing of the call to the location-serving PSAP;
- Adds a third communications network for both media and location data;
- Leverages existing user devices, ISP systems, NG911 standards and architecture, provisioning technologies, and operational processes making for a near-term available and scalable implementation; and
- Supplements and complements other device and network based location and routing technologies in a hybrid system;

We welcome the opportunity to meet with FCC staff and commissioners to share details of the system and provide a live demonstration of the prototype.

Dated: May 1, 2018

Respectfully submitted,



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APPENDIX
**SPECIFIC RESPONSES OF PRECISION BROADBAND TO SELECTED REQUESTS
FOR COMMENTS**

FCC NOTICE OF INQUIRY PS DOCKET 18-64

NOI ¶ 17. “We seek comment on what expectations consumers may have when calling 911 from a wireless device.”

Precision Broadband comments:

In October 2017, Precision Broadband commissioned a Survey Monkey study to better understand consumer perceptions of 911 services and gauge the potential demand for 911 access using broadband. Two hundred fifty people in a nationwide panel, representing all demographic groups and areas of the US, completed the online survey. Among the data collected from that survey, consumers were asked about their personal experiences with 911 as well as their perceptions of 911 accuracy and reliability. Significantly:

- 30% of respondents contacted 911 at least once in the last 2 years (74% from a mobile phone, 26% from a landline phone).
- Of those that contacted 911, 36% reported that they did not believe that the 911 operators knew their location, and 22% of those that called 911 said they did not know or could not communicate their location to the 911 operators.
- The perceptions of all 250 survey participants regarding 911 services being able to accurately and quickly locate them when they call are as follows:
 - 67% of mobile phone users believe calling 911 from a mobile phone is reliable.
 - 20% of mobile phone users believe texting 911 from a mobile phone is reliable.
 - 75% of landline phone users believe calling 911 from a landline phone is reliable.

¶ 22. “Registered or Provisioned Civic Address... Are there any additional categories of devices that utilize a registered or provisioned civic address that we should consider? The Report finds that devices with a civic address registered by the consumer or provisioned by a carrier or

other entity have potentially high accuracy, but will not provide accurate location if the device is temporarily used elsewhere or permanently moved without updating the civic address.”

Precision Broadband comments:

In the Precision Broadband’s Survey Monkey study, participants were asked if they would be interested in using a broadband device and Internet connection for accessing 911 services. Fifty-six percent expressed interest in doing so by using at least one of the devices (smart phone, tablet, PC, digital voice assistant, TTY and video relay system) to contact 911.

Regarding the registration and maintenance of the address locations, the Precision Broadband system does not rely at all on the user or user device for location or routing. The user device does not even need to have location electronics. Precision Broadband’s system automatically derives the location of the calling device based on the broadband access network only. The calling device can be nomadic or in a static location. Moreover, the 911 caller and the ISP’s home broadband subscriber are not necessarily one and the same. The calling device’s location changes wherever the device connects to a fixed broadband connection (facilities-based ISP) as long as the connecting ISP supports the system. The horizontal and vertical location is as accurate and timely as the landline telephone E911 service for PSAP routing and emergency dispatch.

We agree with the statement that the civic address registered by a carrier is highly accurate. However, we **do not** agree that the consumer registering and updating their civic location is reliable. Most consumers will not configure their address in the device, and for those that do, few will update their device locations as they move about. Furthermore, consumers could not be relied upon to consistently enter accurate location information required for 911 purposes (wrong syntax, typos, incompleteness). On the other hand, facilities-based ISPs can

ensure the same level of location accuracy and universal participation for their broadband data customers as is found today in the landline telephone carrier business for E911. Because all major facilities-based ISPs operate landline telephone carrier businesses, they all have systems in place today that support telephone-based E911 location and call routing. Those same systems can be repurposed for also supporting broadband-based 911 location and routing.

¶ 29. “Other Solutions. We therefore seek comment on any additional solutions that can be leveraged to provide location-based routing for wireless 911 calls that are not discussed above.”

Precision Broadband comments:

Since this Notice of Inquiry is predominantly targeting existing, known, or planned systems and market participants, Precision Broadband’s solution is offered as an “Other Solution.” With respect to quantifying the accuracy, timing, and reliability of the location that the solution generates, we believe under a scaled implementation and with normal network traffic, the Precision Broadband solution will be at least as accurate, fast, and reliable as E911 service for landline telephone service. It should be noted, however, that Precision Broadband’s solution is not just a location system. It also offers a third network for transporting 911 multimedia to the appropriate PSAP. This system actually adds more robustness to the existing 911 communications system by providing a primary multimedia transport network as well as a secondary, fail-over network when mobile and/or telephone networks experience outages.¹⁰

¹⁰ Recent examples of outages include:

- (1) March 8, 2017 – AT&T Wireless nationwide 911 outage that affected service for four hours.
- (2) August 4, 2014 – T-Mobile experienced two nationwide outages during which time many of the mobile carrier's then 50 million subscribers were unable to reach first responders. Fined \$17.5 million by the FCC.
- (3) April 14, 2014 – Verizon outage affecting 750,000 customers in California. Fined \$3.4 million by the FCC.

The fixed broadband-enabled system offered by Precision Broadband is not a substitute for other device-based location services. It is complementary. The fixed broadband 911 location, routing and communications system offered by Precision Broadband herein is expected to be used alongside other location technologies as part of a hybrid location system on user devices. Ultimately, the preferable solution is that the device, the network, and/or the PSAP system together will ascertain which location data point from which system is the most accurate under a given set of circumstances.

For instance, if a 911 call originates from a residential home or an apartment in a multi-story building served with cable modem, DSL, or FTTP service, the best location is likely to be derived from the fixed broadband system. If the call originates in an outdoor location (a car or a park), the best location is likely to come from a device-based/satellite technology (AML, A-GNNS/A-GPS). If the call originates in a shopping mall, a device-based/satellite technology, coupled with a public Wi-Fi or Bluetooth access point proximity network technology (NEAD) might be the most accurate.

It should also be noted that while the fixed broadband location and communication system proposed by Precision Broadband is initially relevant for 911 purposes, Precision Broadband also foresees additional uses for this system. It would be highly beneficial for people with cognitive, hearing, or sight impairments and other accessibility needs that would find it easier and less costly to access 911 and other location dependent services using mass-market devices like tablets, PCs with full keyboards, Amazon Echo, and Google Home.

(4) September, 2014 – Sprint hearing-impaired customers who used the Internet Protocol Captioned Telephone Service (IP CTS) were unable to make calls to 911. Fined \$1.2 million by the FCC.

Lastly, this same network and system can be used to make specific targeted outbound public safety alerts that can be heard, seen, and relayed to people with various phone and non-phone communication devices. This would be particularly relevant with respect to supporting the initiatives set forth in the FCC CG Docket 15-91 and 15-94, *In the Matter of Wireless Emergency Alerts*.

¶ 30. “In addition to examining the capability of different technologies to provide improved routing information consistent with reasonable response times, it is also important to examine the feasibility of various solutions, including whether and how they could be implemented, and at what cost.”

Precision Broadband comments:

Precision Broadband has developed a prototype system that demonstrates an end-to-end 911 call from a device connected to a DSL or cable modem network, whereby its location is automatically derived, that is then connected via SIP to an E911Net, and, along with its civic address and geocodes, is then routed to and answered by the proper designated PSAP workstation. While the prototype itself is not a deployable production system, Precision Broadband expects to develop one should there be a market for this solution. We have high confidence that this system can be reliably developed for a scalable, secure, and robust production environment in a relatively short period of time, depending on financing. The system could be implemented quickly and economically, because it leverages existing network architectures, equipment, topologies, provisioning processes, databases, and consumer devices as well as legacy and NG911 standards. Few, if any ISP architectures, customer premise equipment, user devices, or PSAP systems would need to be changed.

Regarding the cost of the implementation, we believe that the cost would be well below the amount of projected new 911 fees that could be assessed on consumer broadband connections. Based on Precision Broadband's Survey Monkey study, we believe consumers would generally be understanding of such a fee. In our survey, consumers were asked how they felt about a \$0.50 - \$1.00 fee added to their monthly broadband bill for 911 support, and 41% of all respondents were accepting of such a charge. Of the 56% that said they would want to use their devices to connect to 911 via their broadband connection, 61% agreed that such a charge was reasonable. It should be noted that only 43% of mobile and landline phone users were even aware they were paying a 911 fee on their phone bill, and that once they were advised of this, 72% thought the amount charged was reasonable.

¶ 31. "Existing Standards. If a 911 location routing methodology is to be implemented successfully, it is important that it be uniform and interoperable among carriers, i.e., that it be standardized. We therefore seek comment on any existing standards that are implicated by the design and implementation of the location-based routing solutions discussed above."

Precision Broadband comments:

Aspects of the location standards that have been developed to-date that utilize IP access networks are the foundation for Precision Broadband's broadband location system. However, many of those standards assume changes to, and replacements of, installed network, end-user devices and customer premise equipment hardware and/or firmware. In practice, implementing these standards as-is would impose considerable costs and operational impacts on service providers and consumers. This is likely why a fixed broadband location and routing system has not been deployed. Precision Broadband's solution leverages certain aspects of some of these

standards, with a variation on techniques that would facilitate implementation without changing existing and installed networks or hardware.

Lastly, some new standards for emerging services, applications and new classes of non-phone IP devices will need to be agreed upon, especially with regard to cyber security, user error and false alarms. These will be required to fill gaps and ensure universal support among device and operating system manufacturers, carriers, ISPs and PSAPs.

¶ 33. “We seek comment on these capabilities in the context of the transition to NG911. How will the availability, speed, accuracy, or reliability of location-based routing capabilities improve as PSAPs transition from legacy 911 to NG911 operations?”

Precision Broadband comments:

While Precision Broadband’s fixed broadband location and communications system can be adapted to interface with legacy PSAP systems, it is designed for implementation with IP-based systems, including NG911 ESInets. Currently, there are 19 states that have installed NG911 systems statewide and eight states with implementations in progress.¹¹ New funding sources, like the proposed broadband 911 fees, could accelerate the migration to NG911 and support the fixed broadband 911 system contemplated herein.

¶ 34. “In this Notice of Inquiry, we seek information on the means available to the Commission to facilitate improvements in 911 routing and reduce the likelihood of misrouted 911 calls. Potential approaches could include promotion of voluntary best practices, implementation of incentive-based mechanisms, or regulatory action.”

Precision Broadband comments:

¹¹ 911.gov, “Next Generation 911,” *available at* https://www.911.gov/issue_nextgeneration911.html (last visited April 26, 2018).

Under existing funding sources, any capital for investing in new location, routing and NG911 systems must be drawn from other priorities or through increases in 911 fees on mobile and landline telephone services. The number of households with landline phones continue to decline, thereby decreasing a source of 911 funding. Mobile phone growth is plateauing and therefore, unable to offset the losses from further landline phone cord-cutting. By enabling the broadband data services of facilities-based ISPs for 911 purposes, there would be a technical improvement to the location, call routing, and emergency communications systems, as well as a justifiable case for assessing fees to support such purposes. At an anticipated average of \$0.75-\$1.00 per month for 106 million broadband connections, there would be an additional \$1 billion in annual 911 funding in the US.

¶ 35. “We seek comment on any action that we should consider to encourage voluntary implementation of location-based routing for wireless 911 calls.”

Precision Broadband comments:

We would hope that fixed broadband ISPs would voluntarily participate in the call location, transport, and routing of 911 calls, because it is both a public safety and a value-added benefit for their customers.

- Fixed broadband ISPs are already seeing some level of data service cord-cutting by customers in favor of mobile wireless broadband service. If the fixed broadband network provided the same location accuracy and reliability as landline telephone E911 service, some of that cord-cutting could potentially be curtailed.
- Many ISPs are engaged in developing, promoting and/or deploying services in support of in-home connectivity and IoT devices and applications. Expanded usage of these devices makes the high-speed broadband data service more valuable to the ISP's customers. Thus, these ISPs would benefit from enabling 911 for their customers.
- Additionally, if 911 fees were assessed on a non-discriminatory basis by all fixed broadband ISPs, no ISP would be at a competitive disadvantage from an economic standpoint.

- If the ISPs were allowed to share in the collected broadband 911 fees, they could recover most, if not all of their compliance costs.

We also hope that the wireless carriers would voluntarily support this system.

- It would facilitate timely compliance with the location accuracy requirements set forth in the Fourth Report and Order, Wireless E911 Location Accuracy Requirements, PS Docket No. 07-114.¹²
- Assessing 911 fees on fixed broadband data services would provide relief for wireless carriers and their customers from having to shoulder the burden of future funding of 911 services through rate increases.
- If the wireless carriers were allowed to share in the collected 911 fees, they could recover most, if not all of their compliance costs.

¶ 36. “Are there any incentives that the Commission could provide to encourage the development and implementation of location-based routing solutions for wireless 911 calls?”

Precision Broadband comments:

While imposing additional fees is never popular, we believe that consumers would be accepting of paying 911 fees on broadband service as long as the service is used for emergency services – especially since it would enable emergency calling for many new consumer devices. As a result, there would be monetary incentives for market participants to invest in these systems and additional funding for accelerating NG911 deployments. See also response to paragraph 35.

¹² *In the Matter of Wireless E911 Location Accuracy Requirements*, PS Docket No. 07-114, Fourth Report and Order, ¶ 6 (2015). The Commission required that nationwide CMRS providers must provide a dispatchable location or x/y coordinates for 911 calls, accurate within 50 meters at the horizontal level at the following success rates and timeframes: in 2017, 40% of all calls; in 2018, 50% of all calls; in 2020, 70% of all calls; in 2021, 80% of all calls. The Commission also required CMRS providers to meet certain benchmarks for vertical location accuracy by 2021 in the top 25 market areas and 2023 in the top 50 market areas. *Id.*

¶ 39. “Costs of Implementation. Would location-based routing improve the efficiency and thereby reduce the cost burdens on PSAPs, first responders, or other 911 stakeholders?”

Precision Broadband comments:

If 911 fees were applied fixed broadband service, the additional funding generated would provide significant relief for the financial burdens of PSAPs, first responders, and other 911 stakeholders.